

WWF-INDIA

Subscriber Newsletter of the World Wide Fund for Nature—India

Vol 8 No. 4

Fourth Quarter 1987

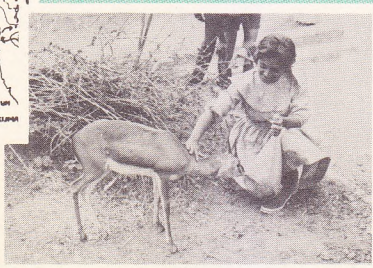
Newsletter No. 63



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Comment

In November 1987 we were formally informed by an 'Order and Decree' of the Bombay City Civil Court that our application for change of name from World Wildlife Fund-India to the World Wide Fund for Nature-India had been approved. The acronym WWF-India remains unchanged.

What's in a name? Well, in this case there was the need to emphasise that WWF-India was not just concerned with wildlife species in isolation. Wildlife (plants, animals, micro-organisms) could never be protected or conserved without protecting habitats. The health of such habitats depended upon the way in which human interaction with them was managed—interaction which was often both legitimate and necessary. Which mean't that one had to look carefully at the many processes of national development that impinged on wild habitats.

For in recent years we have become sharply conscious of how development projects—dams, mines, industries, settlements—planned ostensibly in the national interest have had disastrous impacts on our natural ecosystems. How they often alienate people from the lands on which they have lived and worked and drawn sustenance from, for many generations. How they force large segments of our population to be a burden on the life supporting functions of nature.

Hence the term 'eco-development'—an aspect of which is the subject of the lead article in this issue. The term eco-development, first conceived by the United Nations Environment Programme, attempts to define a form of development that is ecologically sustainable, makes maximum use of indigenous resources and skills, and is socially and economically just. WWF-India has broadened the range of its concerns to look at nature conservation in this holistic manner. And therefore the relevance of the change of name.

Thomas Mathew

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The views expressed by the authors are their own and do not necessarily represent those of WWF-India.

Like man langurs are social animals too. Grooming each other helps to reaffirm their bond just as reaching and touching does ours.

pic. Gerald Cubitt



Eco-Development of the Mahabaleshwar-Koyna Watershed Region

SHIRAZ K. SATARAWALLA

Mahabaleshwar and Panchgani are not merely pretty tourist spots. They are also the centre of a major watershed for three large reservoirs: the Koyna, the Dhom and the Kanher. The Koyna reservoir is best known as a major source of Maharashtra's electricity supply, but it is also a source of irrigation water and it regulates the flow of water in the Koyna river, which joins the Krishna river at Karad. Together, the Dhom, Kanher and Koyna reservoirs supply much of the river and irrigation water which supports human life and agriculture in the dry lands of Satara and Sangli districts.

So, when we talk of the environment of Mahabaleshwar and Panchgani, there is something more at stake than tourist holidays and the local economy of a few tens of thousands of inhabitants. From the relatively small Mahabaleshwar-Koyna mountain region, with its extraordinarily high monsoon rainfall, comes water and electricity for many

millions of people, in the Konkan, in Satara and Sangli districts, and beyond.

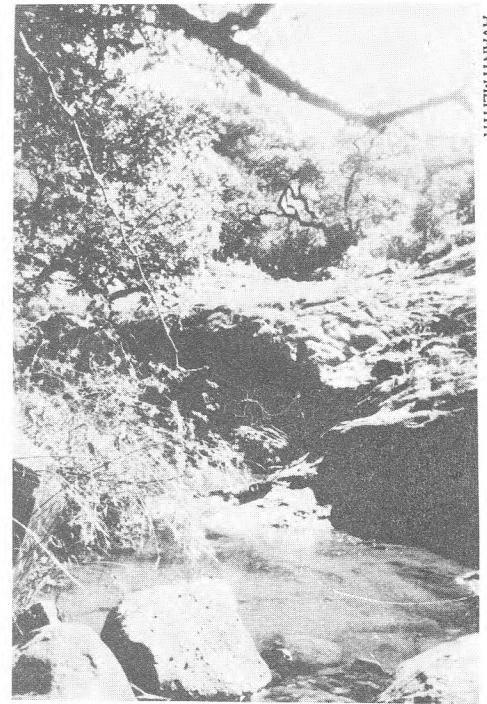
And further, if we realise that the Mahabaleshwar-Koyna region is a fairly typical example of the North Sahyadri watershed, which runs from Goa to Gujarat, then we are talking about an issue of national importance; because the North Sahyadri watershed feeds a great part of the Krishna and Godavari river basins, including major parts of Andhra Pradesh and Karnataka as well as Maharashtra.

A Vital Ecosystem

During the four months of the monsoon, the North Sahyadris get some of the heaviest rainfall in the world. But, in the remaining part of the year, there is a long dry period, without any rain. These alternating extremes of wet and dry weather give rise to a very special kind of ecosystem, with unique kinds of plant and animal life.

In order to withstand the onslaught of tremendous monsoon rain, the vegetation has to be very thick and strong, to prevent the rain from wearing away the topsoil. Trees and plants catch the raindrops on their leaves, and much of the rainwater runs along trunks and roots into the ground. So, a suitable forest cover helps rainwater to soak into the ground, where it gradually percolates into underground reservoirs and feeds underground streams, thus providing water in wells and keeping springs and rivers flowing in the dry season. By soaking up rainwater, instead of letting it tear down the hillsides, mountain forests control siltation, drought and flooding, in a vast area of river valleys and plains below.

On the flattened crests of the North Sahyadris, as for example at Mahabaleshwar, trees and plants are short and stunted, because of the shallow, lateritic soil. Moreover, vegetation grows very slowly, in these poor, acidic soils whose nutrients keep being washed down into the valleys. Individual plants are particularly dependent on the thick profusion of plant life in specially established ecosystems which have developed over a very long period, so as to



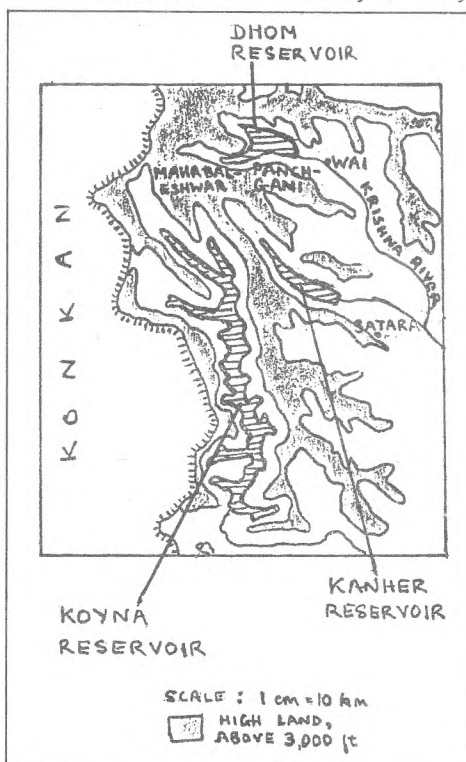
One of the many streams that feed the Yenna Lake during the monsoon.

recycle scarce nutrients and to afford mutual protection against mountain-top extremes of high wind, heavy monsoon rain and a long, harsh dry season. Most ordinary kinds of trees found elsewhere do not survive these climatic extremes, and once the natural forest is cut or seriously disturbed, it takes a very long time to grow back.

On the lower slopes of the North Sahyadris, as for example on the west bank of the Koyna reservoir, trees are tall and they grow faster and more easily, resulting in the massive growth of a forest whose plant and animal life is very different from the crest forests of the mountain tops.

These dense crest forests and the tall slope forests form very rich natural ecosystems that are vital to the watershed function of the North Sahyadris. Unfortunately, nearly all of this natural vegetation has been progressively

(Contd. on pg. 8)



Call of the Primates

MONA PARIKH

Project Assistant WWF—India

Wildlife matters, not only emotionally, morally and spiritually but also for an ecological balance, playing an important role in the survival of plant species and ultimately our own lives.

*"The natural world is our laboratory, playground and temple, as well as our larder, medicine chest and store of raw material. By impoverishing it we only impoverish ourselves and our children."**

India is indeed still one of the most beautiful countries in the world, envied by many western nations, for her fascinating and varied flora and fauna.

But are we blind to our rich heritage? Ig-

god Hanuman and his monkey army helped Lord Rama to recapture his bride Sita, macaques and langurs still swarm through the parks, temples and bazaars of many of our cities. They have been able to live in human habitat far from their traditional forest dwell-

and could very well be next on the way out!

Man is a primate along with his evolutionary relatives the gibbon, the langur, the loris and the lion-tailed macaque. However, the survival of the exclusively Indian, the world's most endangered primate, the lion-tailed Macaque (*Macaca silenus*) is at great risk. Its extinction is imminent.

Lion-tailed Macaque:

There are less than a thousand of these beautiful animals left in the wild. Their only home now is the evergreen rain forests and similar formations, all known as 'sholas', which clad the upper elevation of the Western Ghats in South India.

If you have ever been fortunate to see a lion-tailed macaque in the wild, you will never forget its striking black body and the long greyish mane around its face. It is aptly called 'Siah bandar' or 'Singalika'. The lion-like tuft at the end of its tail (and hence its name), is pronounced in adult males. These are medium sized monkeys, the males slightly larger than the females. Shy and elusive, these handsome monkeys are rarely seen as they normally remain at upper levels of the forest canopy. They have a strange mannerism of being very deliberate in their movements. When crossing from tree to tree, they avoid jumping and the whole troop of 10-20 individuals descend to the ground and walk across to the next tree in single file. Usually a dominant male moves cautiously some distance ahead of the main group.

A sudden 'cough' or a loud 'coo' makes one look over the shoulder expecting to see a man or a pigeon. These are only two of a whole repertoire of vocalisations recorded of the lion-tailed macaque. There is a whooping call that one would expect only from the gibbon, the female's scream, the juvenile's squeal, the troops' long distance 'coo' or 'cough' communicating its whereabouts, the female's love call, the male's call during sexual excitement, and so on.

* Robert Allen in "How to save the world"



The beautiful mane and the tuft at the end of its tail gives the lion-tailed macaque its name. It has been representative of the cause against the Silent Valley Project.

norance breeds indifference. Indifference makes us turn a blind eye to the lunatic, wicked destruction of our wildlife and their habitats. Maybe from knowledge of nature's creations will come love and life for our wildlife.

We at WWF-India begin a series on India's threatened animals. Let us get to know our animals, so we can help save them. We open the chapter with man's closest relatives—the primates.

Nowhere has the ancient relationship between man and his fellow primates been more intimate and complex than on the Indian subcontinent. Protected for centuries by the Hindu belief that all creatures carry a spark of divinity and must not be killed, and abetted by the Hindu legend Ramayana that the monkey

ing. This is especially true of the Rhesus macaque and the Hanuman (common) langur. However, there are many other primate species living in their natural habitats that we know so little about.

Let us today get to know some of these primates, not only because they are our fascinating relatives but also because their survival is threatened due to man's activities.

Concentrating mainly on our most endangered primate, the lion-tailed macaque, you shall also be introduced to the lesser threatened species of primates found in India. These are the Nilgiri and Golden langurs, the Hoolock gibbon and the slow and slender Loris. These species are included because of their vulnerable status due to human pressures

With their diverse and effective means of communication the lack of speech is probably never felt.

The 'sholas' or wet, broad-leaved evergreen forests with a minimum annual rainfall of 175 cms. are rich and diverse in plant life. Giant climbers, epiphytic ferns, mosses and orchids form a dense jungle with trees reaching upto thirty to fifty metres in height. Here, the lion-tailed macaque find an abundant food supply of fruits, flowers, leaves, insects, lizards, tree frogs, fungi, etc. Their favourite is the cullenia exarillata, a very large, slightly buttressed tree. They also enjoy the jackfruit tree which is an important food source all year round. During the monsoons, the monkeys lick leaf surfaces for water or drink from the natural bowls formed in tree forks. They are also seen at perennial water courses that run through the jungles. There is no doubt that the Macaca silenus evolved in rainforests and it is to this habitat which it is adapted. Spending a fraction of its time on the ground, it is the only macaque which is an obligate dweller of such forests.

Lion-tailed macaques share their habitat with three other primates—the Nilgiri langur (*Presbytis johnii*), the bonnet macaque (*Macaca radiata*), and the slender loris (*Loris tardigradus*).

The Nilgiri langur, because of its similar arboreal and shy nature, and its black coat, is often mistaken for the lion-tailed macaque. Being a major food competitor, there are reports of ferocious battles between these two monkeys. However, on the whole, the Nilgiri langur avoids the lion-tailed macaque and keeps out of its way.

The bonnet macaque found at lower elevations is more terrestrial and is found largely in the drier deciduous and scrub forest regions. It too avoids the lion-tailed macaque.

In the lion-tailed macaque's habitat you will sometimes see the Malabar giant squirrel (*Ratufa indica*) eating the seeds discarded from the fruits eaten by the monkeys. There is the large Jerdon's imperial pigeon which eats figs from the same *Ficus* trees as the lion-tailed macaque.

Female lion-tailed macaques bear their first young at about five years of age, after a gestation period of about 154-186 days. They probably have only one or two more young in their thirty odd years lifetime. During mating there is excessive mutual grooming and embracing by the couple who move far away from the troop. The female in oestrus gives love calls and the male responds by examining her genital area. There is no fixed breeding season though the young have been seen normally in early September.

Will man allow more births of this beautiful animal or will he be the cause of the extinction

of yet one more of his fellow creatures?

The lion-tailed macaques are now confined to three States of South India in the Ashambu hills, Nilgiris, Anaimalais, Cardamon hills, Periyar lake.



The black coloured coat, white ruff and exceptionally long tail easily distinguishes the Nilgiri Langur.

Habitat destruction for agriculture, coffee and tea plantations, roads, dams and the replacement of endemic forest trees by exotic species are some of the major causes leading to the rapidly decreasing population of the lion-tailed macaque. Additionally, its demise is being hastened by hunting for meat, so-called aphrodisiacs and the pet-trade. The fact that the Indian law prohibits hunting of this species is of little consequence to the determined poacher.

The problem of our vanishing species is not merely a matter of prudent husbandry of our resources. It is also a matter of loving children, nursery rhymes, games and laughter. And to help, to defend and to protect. We can survive the extinction of the lion-tailed macaque if we can afford the loss of a child's laughter or the

monkey. However, the destruction of its habitat is the principle reason for its decline.

The Nilgiri langur lives in the sholas of the Western Ghats along with the lion-tailed macaque; south of Coorg and in the Nilgiris, Anaimalai, Brahmagiri and Palni Hills.

Essentially arboreal, it can often be seen crossing the grassland from one shola to another. An active and shy animal, it sometimes raids plantations and gardens, but is largely an elusive creature.

The troop, sometimes as large as thirty individuals, moves in a single file through the trees, each animal stepping on the same branch as its leader. When alarmed it leaps into the air and runs in a series of galloping jumps and bounds.

They have a variety of vocalisations. A long loud call for long distant communication, a guttural alarm cry, an infant's squeal, an adult male's whoop, etc. Like all other primates, (including man), in addition to vocalisations, the Nilgiri langur also communicates by means of gestures of the eyes, mouth, posture, etc. The defense of each troop's territory, carried out by a single adult male forms an interesting behaviour pattern. Typically, he sits on a high tree branch, opens his mouth (exposing his lower incisors), and emits a continuous low-pitched buzz (like a sound of a creaking door). This is answered by the male of the other troop who is at least 25 metres away. The two males may also quickly move their heads upward while keeping their mouths open and closing them slightly as if biting air. Then one male runs towards the other often giving whoops, grunts, hiccups, or "hah-hah" calls, chasing him into the latter's territory. After this confrontation the two groups move in opposite directions into their own territories, peacefully.

Unlike many other primates, the Nilgiri langur's society is "female-focal". The male plays a relatively minor role in the protection of the group or in bringing up of the young. He acts in territorial battles and his major social role seems to be the fathering of succeeding generations.

Langurs, (like their African relatives, the Col-

In this finite world, Mankind and Wilderness need each other—one for its sanity, the other for its survival.

wonder of rainbows.

The Nilgiri Langur:

Early, before sunrise, the rainforests of Periyar echo to the deep booming of the Nilgiri langur (*Presbytis johnii*). But this deep ringing 'hoo hoo hoo' is fading away from our jungles, as the glossy black langur is persecuted for its fur and supposed medicinal value of its flesh, blood and organs. It is the most hunted Indian

obus), are leaf-eaters. Leaves form the bulk intake of the diet. To exact maximum nourishment from this enormously abundant but not particularly nourishing diet, langurs have developed specialized digestive systems, including greatly enlarged stomachs. They eat large quantities of leaves and the voluminous guts together make up 1/4th or more of its body weight. At times, it is difficult to distinguish a well-fed langur from a pregnant one that is due to give birth.

The Golden Langur:

It was as late as 1953 that a tea planter-cum-naturalist, E.P. Gee, came forward with any real evidence of the Golden Langur, (*Presbytis geei*) as it was subsequently named.

This deep creamy white langur that shines golden in sunlight lives in the dense tropical deciduous forests of north-west Assam and south-central Bhutan.

A feature of these forests is that the trees undergo a leafless period during the dry season at the end of which new leaves and/or flowers are produced in a sudden burst. The langur takes on a seasonal variation in its coat colour for protective camouflage. During the dry period (winter), *P. geei* takes on a golden red-brown colour merging well with the dull-grey and reddish brown landscape.

The golden langur being shy, avoids man, and is generally non-aggressive, but sometimes after continuous harassment, adult males become agitated on the approach of man and make an "oon-oon" sound, followed by a quickly repeated short coughing sound. Disturbed, these beautiful animals jump from tree to tree, balancing by their long tasselled tails, the females and juveniles grouping themselves around adult males for protection. Groups of ten to eighteen individuals are common.



The Golden Langur with its silky, pale gold fur and long tail never fails to evoke admiration and wonder.

This langur is almost exclusively arboreal, descending to the ground only during the early hours of morning or late evening to drink from a river or stream.

These are gentle, peaceful animals, coexisting

with the rhesus macaque (*Macaca mulatta*), the common langur (*Presbytis entellus*) and grazing domestic animals without antagonistic behaviour displays.

The most commonly heard vocalisation is a low-pitched quickly repeated "ur-ur-ur-ur" usually made when mildly disputing over food or right of way. There are different kinds of alarm calls and infants' screeches when it is afraid. If a leader male is killed, a female may

Male gibbons are black while the females are blonde. This sexual dimorphism is absent at birth, since both sexes are born pale greyish white with faces, palms and soles black. Within a few months the lighter colour of the body becomes black too, remaining black in males and changing to blonde in mature (five to six year) females.

A *Hylobates hoolock* is a mild and docile animal, though its loud powerful voice might



These two males (females are blond) peering at you from under lively white brows are the agile Hoolock Gibbons.

come down from a treetop and utter a long plaintive wail, while the group watches quietly until she returns. Similarly, when a female was shot, a male came down, sat by her and howled loudly and continuously. He rejoined the group when the dead female was removed.

When will we learn to live and let live?

The Hoolock Gibbon:

India's only ape, the Hoolock gibbon (*Hylobates hoolock*) or 'uluk' is found in the rainforests of Arunachal Pradesh, Assam and Nagaland.

Go to the Nandapha Tiger Reserve in Arunachal Pradesh and when you see a gibbon, you will return with a song in your heart and a sparkle in your eye.

A gibbon moving in the trees is one of the most graceful spectacles nature has to offer!

This extremely agile primate has unbelievable dexterity. A gibbon can pluck a bird out of the air with one hand in the middle of a jump and then grasp the branch at which it was aiming, with the other hand. Its locomotion is called 'brachiation', which it accomplishes with grotesquely long powerful arms. It swings from branch to branch, its short small legs hardly moving at all. However, these graceful creatures that are a poetry-in-motion in the trees, are quite comical when walking or running on the ground. Standing erect on their small feet, they run with their long arms outstretched for balance.

make one think otherwise. Its peculiar double call "whoko whoko" is repeated several times by an individual of one group and then joined in by other members and family groups. The forest rings with these calls which begin at daybreak and continue until late morning. The chorus is shorter and quieter in the evenings. During the hot hours of the day, hoolocks retire to the lower, shadier trees of the forest. It is time for silence and rest. They eat fruit, leaves, young shoots, insects, grubs, birds eggs and they love spiders.

Each group consists of a family—unlike most primate societies which move in troops—with an adult female, its single mate and their young. Both the male and female are so jealous of members of their own sex that the young are forced by the hostility of their parents to go off on their own, as soon as they are sexually mature. This way, new family groups are founded.

No animal or man can compare with the feats of this superlative acrobat of the jungles. C.R. Carpenter who devoted a life time to primate studies once observed a branch snap under a gibbon just as it launched itself into the air for a long leap. Turning in mid-air, it reached back, grasped the remaining stump, swung around it, over the top and with almost no break in movement, made the long outward leap of almost thirty feet to the next tree!

The challenge for survival is stiff for the

Hoolock gibbon as pressure for land and timber mounts, and as traditional protection afforded by religious beliefs in their sacredness, wanes. Will India be able to save its only ape?

The Slow and Slender Lorises:

Human beings are accustomed to daytime activity and to relying predominantly upon their well developed sense of vision for dealing with their surroundings. Hearing and olfaction are relatively less important, and humans can thus more easily understand the behaviour of animals which are similarly diurnal in habits.

Yet a majority of living mammal species are nocturnal in habits and there is much evidence that indicates that early mammals were adapted for a nocturnal life style.

As a general rule, it would seem that diurnal life presented great evolutionary possibilities for the primates, whereas nocturnal life blocked or retarded evolution. Thus nocturnal primates represent a more primitive condition based on the retention of numerous little modified ancestral features, combined with a relatively smaller number of recent specialisations.

Better understanding of our nocturnal ancestors, the loris in India, the galagos in Africa and the lemurs in Madagascar, is of capital importance for the recognition and interpretation of the evolutionary history of primates, including man.

The sun has set. You walk with a headlamp through the forests of South India or Assam searching for the loris. If you are really very fortunate you suddenly spot a bright orange-yellow reflection of the light of your lamp. As you gently, quietly move closer, you see a reddish-brown to grey well-furred, small cat-

staring at you. It moves in slow motion clinging to a branch as it searches, stealthily approaches and with a quick grab with both hands, catches an insect.

If watched closely, it will crawl away and try and conceal itself among the leaves, and if that is not possible it sometimes hides its face between its forepaws, presumably hoping you won't see it.

Can this comical, unique creature be a primate? Yes,—but we know very little about the slender and slow loris and they might disappear before we get to know them better if the present rate of the destruction of their habitat continues.

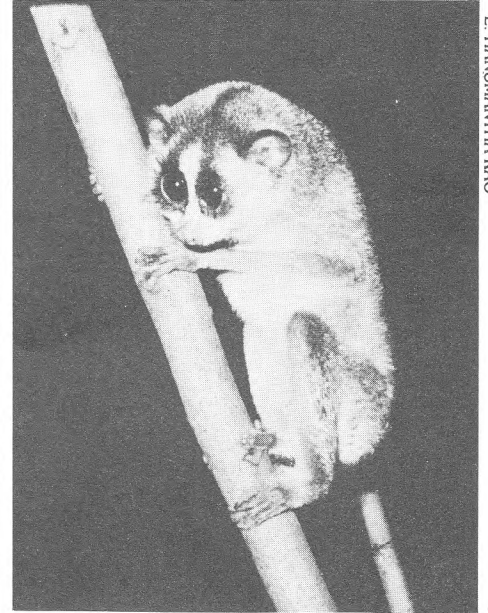
Most of the information we have on the loris comes from studies carried out in captivity. 'Wanur-manushya' or the slender loris, (*Loris tardigradus*), found in the tropical rainforests, open woodland and swampy coastal forests of south India and Sri Lanka, is smaller, thinner and lankier than the "Sharindi-billi" or slow loris, (*Nycticebus coucang*) of eastern India and South-East Asia.

Both species though chiefly insectivorous, also feed on shoots, young leaves, bird's eggs, small birds, lizards, lantana berries, etc.

Their second toe is longer and has a small pointed claw, unlike the other toes which have small flat nails. This claw is used for scratching and cleaning their fur.

The Loris is quadrupedal, a slow and a ready climber; but it does not leap. Both hands and feet are prehensile and their grasp is very tenacious; the animals often hang by their feet for hours at a time. How do they do this? The loris' muscles and tendons function mechanically as in birds, and they do not suffer from fatigue that affects other animals' muscles after prolonged gripping. This is

because blood flows freely through their limbs even after they have been in the same position for several hours. In addition, the thumb and big toe, as in other primates, are opposable enabling the animal to grasp easily and maintain its grip on branches.



E. HANUMANTHA RAO

Vulnerable and shy, how can we allow the Slender Loris to disappear?

The Loris spends the day asleep, rolled into a ball with its head tucked between its legs and grasping the perch with its arms. The curled up position probably serves to retain body heat, since the loris has no tail with which to insulate itself against the chill. And, although it inhabits the tropics, it has an extremely low metabolic rate and would probably freeze to death, were its coat not as warm as it is. Curling up like a ball also plays a part in self-defense against predators.

However, these animals have no defense against man who habitually exploits every living creature for his benefit. The beautiful, large eyes of the slender loris are mistakenly believed to be of medicinal value in the treatment of eye diseases and are considered potent love charms as well. The latter is brought to bear by holding the animal to the fire till the eyeballs burst! Because of these superstitions it has become yet another persecuted animal.

You may not feel personally disturbed by the knowledge that more than 200 species of mammals, birds and reptiles on earth have become extinct within the last three of four centuries, mostly through our fault; nor by the realisation that hundreds of others—the gorilla, the lion-tailed macaque, the whooping crane, the bustard, the big cats, the whales, the rhino and many others—will soon be become extinct within the next three or four years unless there is a change of heart in mankind the world over.



GERALD CURRIE

This is an unusual picture as the Snow Loris like its nocturnal cousin (Slender Loris) is a nocturnal primate.

sized tailless animal with large round saucer-like eyes, each encircled with a brown ring,

Mona Parikh has been involved in various primate-related projects one of which was the Breeding Analysis of Monkeys in Captivity at the Jersey Wildlife Preservation Trust, United Kingdom.

Eco-Development . . .

(Contd. from pg. 3)

destroyed, and only a few pockets of forest are left. The result is that our reservoirs are silting up and will soon be useless, and we suffer more and more from floods and droughts on the Deccan plateau and in the Konkan coastal plain.

In order to restore the watershed function of the North Sahyadris, we simply must protect the remaining pockets of natural forest, and we must study and use these, with their specially adapted forms of life, to reforest this nationally important watershed. It will require a well planned and sustained investment, not only of money but also of scientific and administrative effort. If such an investment is properly made, the benefits will far outweigh the costs.

The Effect of Tourism

Until a few years ago in Mahabaleshwar and Panchgani, tourism did more good than harm to the environment. Because of the public interest created by it, the local forests were protected and the municipal areas were well maintained. As a result, Mahabaleshwar's forests have survived, as one of the precious few green pockets in the generally deforested wasteland that the North Sahyadris have become today.

However, in the last few years, over-crowding and over-exploitation have been seriously damaging the very environment that draws the crowds. Traditionally, Mahabaleshwar has been a place where people have come in a spirit of respect for the environment, to worship the sacred rivers at their source and to appreciate the natural beauty of the mountains.

Today, most of the effort goes into making people indulge themselves and spend their money, with little thought for the environment itself. Hotels, shops and stalls are flourishing, because they have taken the trouble to attract and interest people; but the forest (and honey) museums have not been publicized effectively, and so they do little to encourage any interest in the environment.

There is an urgent need to develop the kind of tourism that encourages awareness of the environment. First, we must set an example by properly maintaining our hill stations and other tourist places; and second, we must develop ways of interesting tourists in the environments which they visit. On both these counts, there has been a miserable failure in the past few years in Mahabaleshwar and Panchgani, on the part of government authorities, non-government organisations and private individuals alike.

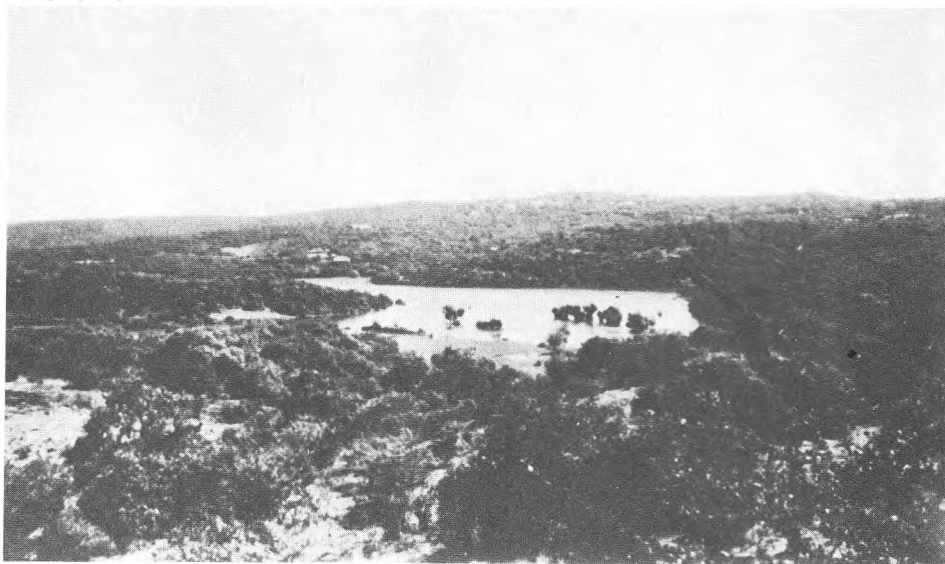
Political and Administrative Neglect

The deforestation of the North Sahyadris has not resulted from powerful commercial interests or from so called difficult problems. Quite simply, it has resulted from political and administrative neglect of this sparsely populated region, because the watershed function of the region and its environmental importance have not been properly assessed.

The major cause of deforestation was shifting cultivation, in which huge areas of forests were burned down for a few miserable kilos of hill millet, or 'nachni' as it is called. Of course, the firewood and timber value of the forests was far, far more than the nachni obtained from shifting cultivation. But, where there were no roads for trucks, there was no way of transporting large quantities of wood, and so the forests were just burned where they stood as the easiest way of clearing them, for an absurdly meagre return. These forests could have been saved by supplying the locals with just a few kilos of cereal, together with some organized education and policing. But not enough people bothered, because these were

lake. Shifting cultivation continues to be practised in the privately controlled lands which extend all along the east bank and along the northern quarter of the west bank, so that no forest is allowed to grow back in most of the catchment area.

In the southern three quarters of the west bank, where there are no human settlements, and where all land is controlled by the Forest Department, the difference is quite spectacular. Some of the land was previously deforested and has partially grown back, quite sufficiently to prevent further soil erosion. A substantial part of the land seems never to have been deforested, for it is covered by a magnificently tall and profuse growth of natural forest, which must once have covered all the slopes of the Koyna valley. The west bank forests have remained as they are because they are protected on one side by the lake itself, and on the other side by a precipitous slope down to the Konkan. But even there it seems that a threat has been emerging in the form of illicit contractors, who ferry illegally cut wood and illegally prepared charcoal across the lake, or who send tree trunks hurtling down natural chutes into the Konkan.



The water level of the Yenna Lake featured above drops considerably during the dry season.

out of the way places with sparse and backward populations, to which little attention could be paid by busy officials under the prevailing priorities and constraints of public policy.

Today, the same sort of public and political neglect goes on, despite some new stirrings of interest. In the Koyna valley, sufficient care was not taken to properly resettle those who were displaced by the dam, and most of these people returned to the shores of the Koyna

Because of deforestation, the Koyna lake is silting up much faster than anticipated, and its life will correspondingly be shortened. The costs, in terms of capital investment wasted and electricity and irrigation lost, are enormous. Thus, the benefit of forestation and reduced siltation is of a much greater order of magnitude than the cost of stopping avaricious contractors and of generously educating and compensating a few thousand local inhabitants to grow trees instead of destroying them. But, a full-scale, long-term program still remains to be effectively initiated. ■

Shiraz K. Satarawalla is an active member of the Save Mahabaleshwar-Panchgani Association. Those interested in follow-up action may contact him at the following address: Save Mahabaleshwar-Panchgani Assn. The Club, Mahabaleshwar 412 806.

AVANTI MEHTA

A Peep into the Pabitra Reserve

BRIG.CHANDRA B. KHANDURI, Indian Army

It was the last week of September. On the way back from the drip-drap of Cherapunji and the salubrious weather of Shillong, and just outside Guwahati, my friend Lakhwant made me turn our vehicle about. He said he had seen a glimpse of what he thought was a board, which showed the presence of something like a sanctuary or a reserve close by. Why not try it, he said. Well, why not, I said in a rejoinder and soon we were driving on a stone-soled, badly damaged road over broken bridges and the vast expanse of flooded countryside. The local fishermen had established their fishing hamlets on a few small islands. In the lagoons one could see flocks of flamingos, ibis, and indeed, the inevitable geese and teals. The road led to the Pabitra Reserve Forest. When we did reach it after an uncertain journey of nearly 20 kms or so which took, in terms of time, a little over an

tuaries helped him orientate us to the place and the population and species of the animals one expected to see: the rhinoceros, wild buffalo (not really gaur), deer and perhaps some wild boar, if luck held. Soon an elephant was arranged for on the other side of the river; we rowed across the Kalong. With a loaded gun in hand, the four of us seated on the elephant trudged along the tall savannah grass of the 16 sq. Km. Pabitra Reserve Forest.

Padmini, our elephant, just in her teens, waded through the water carefully, eating as much grass as she could, while lugging some five quintal weight. She often broke a small branch of a tree with sufficient leaves on its end to fan off the insects and flies that continuously attacked small wounds on her neck. Every step she took was a measured one. I was privy to the proverbial elephant sense in Padmini.

right disturbing some of the golden plovers and the pelicans. In minutes, as Sharmah had predicted, we began seeing large herds of rhinos.

Padmini carried on until we ran into a herd of some 20 rhinos. A small group of domestic cows grazed next door—unconcerned, happily and merrily. A wonderful experiment in Corporate living in the Reserve. The 'mahout' said he would take us just 10 yards short of the herd. As we closed in, a few rhinos maintained their distance, while some 10 or so of the grown ups, began encircling us. Fine tactics after all! Padmini was getting apprehensive; she was flapping her fanlike ears more vigorously. Sharmah thought, in case the rhinos came charging, a shot in the air would be a sufficient deterrent. It turned out to be an interesting small drama: the rhinos which had formed into five groups of two each all round us would move forward and retreat, and change position as I clicked my camera. In my three decades in uniform and experiences in manoeuvre in both war and in training I had not seen a more lively drama. Before Padmini had her multi-directional attack Mr. Sharmah thought it more prudent to make a clear break. We crossed the river; Padmini swam and we had our bottoms wet in the bargain. Some cranes, geese and pelicans came our way. A small herd of brown wild buffalos crossed us defiantly. We descended from the high pedestal of Padmini after almost a 90 minute ride, thanking Mr. Sharmah, the Mahout and of course, Padmini, the graceful lady.

Pabitra is having serious problems, I could see. The villagers are cutting into the reserve, expanding their *khetis* while the forest is getting sparser for the animals. A time appears to be approaching when poachers will have an uninterrupted entry into the Reserve. In any case there is very little to stop that from happening, unless the Reserve is fenced-in and declared a Sanctuary.

I returned with mixed feelings—of anxiety for the fine population of rhinos and of happiness for having been to this small reserve, a splendid retreat, glad for the Ashram-cum-Rest House that Pabitra offers, and, finally its nice and co-operative staff. ■

A SCHEMATIC LOCATION OF PABITRA RESERVE



hour, we drove into a beautifully situated Forest Rest House on the bank of the river Kalong. The place looked more like an 'ashram' of the rishis—our ancient ascetics, people of wisdom and learning—than a modern rest house. It signified its etymological characteristic—the pure, the serene, the tranquil—whichever way one would like to interpret the Sanskrit word Pabitra (Or, Pavitra).

Upon our arrival, Mr. Sharmah, the Forest Beat Officer, scuttled out of his room cum office and engaged us in fruitful conversation. An old moth eaten map of the Assam sanc-

Mr. Sharmah, who gave us a running commentary from the rear seat, suddenly pointed at a dark spot in a grass thicket which, as we moved closer, began showing the silhouette of an animal. It turned out to be our first one horned Indian rhino. It was not too big but agile and a loner. According to Sharmah the fellow may have been jilted in love by a female or pushed out by a more dominating male. The leadership struggle is more pronounced and direct in the animal world than, say, among the politicians!

We carried on, crossed a deep nullah and moved to the open spaces and then turned



Blind children on a nature trail are encouraged to use their other faculties.



It's fun to climb a tree, to get the feel of nature.



A stroll along the seashore with a mentally handicapped child.

Camp with

photographic credit:
Sadat Attarwala
Nitin Pandya, Rajkot I



Studying the pugmarks through the sense of touch.



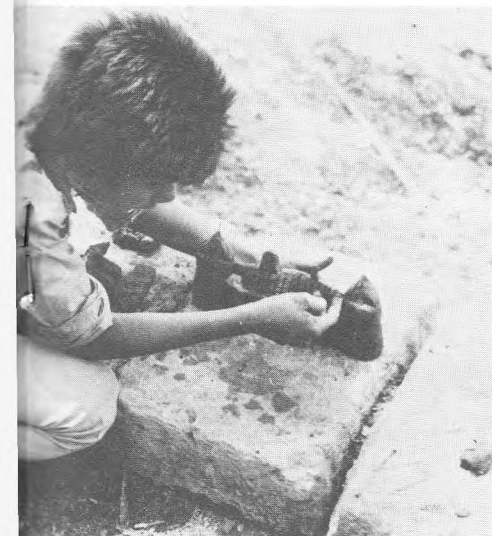
A deaf boy working on a clay model of the camp was held.

a difference

t Divisional Office



s of the blue bull
ouch.



el of the Hingolghadh fort where



A child with a physical handicap invents his own nature game at the sea side. It is called dodging the waves.



A deaf girl makes friends with a chinkara.



A snake demonstration for those who cannot see.

Gujarat

BARODA



Snake show during Wildlife Week programmes of the Baroda Division.

In Baroda, WWF-India organised different programmes in collaboration with the Forest Department. The highlight was the Bicycle Rally in which seventy students took part and undertook to spread the concept of environmental awareness in the village of Por as well as other villages nearby. Tree planting programmes were carried out in an attempt to beautify the slum areas of Por, posters were distributed and in the evening a film show was organised, which was attended by 600 people.

Nature Club members utilised 3,000 stickers in urban and rural areas to create an awareness of nature. Wildlife week celebrations also included an exhibition-cum-film-cum-snake show at the Baroda Museum, which was attended by more than 10,000 people in and around Baroda. Films were screened on wildlife and nature and volunteers organised snake demonstrations explaining at the same time the difference between poisonous and non-poisonous varieties and describing their habits and behaviour.

AHMEDABAD

The Ahmedabad division of WWF-India celebrated wildlife week by organising a variety of activities for school children and for WWF subscribers.

The week began on October 2nd with an 'On-the-spot' painting contest for children below the age of twelve years. Over 350 students from ten schools arrived at Sun-

darvan to take part in the contest to paint scenes from nature and wildlife.

The painting competition was followed by an elocution contest, a slogan contest and a quiz, all centred around the theme of wildlife. The grand finale attended by 300 people on October 4th included the prize distribution ceremony, a snake demonstration by Anil Patel and a movie.

Members of WWF-India were also taken on a field trip to Narda near Kheda, dur-

ing which they saw a variety of birds including the marsh harrier, purple heron and the black headed munia.

Kerala

TRIVANDRUM

WWF-India Kerala has a series of conservation promotion activities to its credit. In August, five new nature clubs were inaugurated at a function during which prize winning stories on wildlife were read out by Ambica Nagappa and V.K. Lavika. At the same time, the 12-page newsletter of the State Committee was released by Fr. Joseph Vattakunnel, S.J., Superior of St. Joseph's High School.

Soon after the inauguration of the new Nature Clubs in Trivandrum three of the clubs joined together and organised a wildlife exhibition. The three clubs were: Oyster, Assisi and Salim Ali. This was the first time such an exhibition had been held in Trivandrum. On display were photographs, postage stamps, magazines, press-clippings, slogans, paintings, posters, factsheets, charts, diagrams, stuffed specimens, abandoned birdnests, medicinal plants... and a lot more. There were also a few live specimens: tortoise, fish, garden lizards, squirrels, frogs, etc. More than 4,000 people saw the young nature lovers in action.

The exhibition was covered by the local press, All India Radio and Doordarshan.



The mini Wildlife exhibition organised by Nature Clubs in Trivandrum.

Karnataka

BANGALORE



Dr. H. Narasimhiah presenting the awards at the inter-school quiz competition in Bangalore. Also seen in the picture is Mr. Bhoja Shetty, Karnataka State Organiser.

Twenty-eight schools from Bangalore and its environs participated in a Quiz Competition on Wildlife and the Environment in October. The first prize was won by Kendriya Vidyalaya (Indian Institute of Science). The second prize by Sri Aurobindo Memorial School and the third prize by St. Joseph's Indian High School.

New Delhi

N. REGION OFFICE

Deeply concerned at the alarming depletion of our natural resources, representatives of the World Wide Fund for Nature—India led by Shri K.P. Singh Deo, Member of Parliament, called on President R. Venkataraman on 8th December and apprised him of the inevitable consequences to environment and sought his support for WWF-India's Nature Conservation efforts. The incalculable harm being caused to the ecology of the country by the irresponsible exploitation of our forest wealth for profit by unscrupulous vested interests under the guise of rapid economic growth was explained. The President assured the WWF-INDIA representatives of his unstinted support in their efforts to protect the environment and gave his consent to becoming a Life Subscriber. The wide range of WWF-INDIA Nature Con-

servation and Environment Protection programmes were explained to the President and a collection of the publications were presented to him.

Shri K.P. Singh Deo, M.P. was accompanied by Shri Duleep Matthai, Trustee-NR, Shri Thomas Mathew, Secretary General, Shri M.Z.A. Baig, Shri Rakesh Khanna, both members of the N. Region Committee and Shri A. Chandrasekhar, Regional Organiser, WWF-INDIA.

Maharashtra

BOMBAY

Secretariat

Shri Shiwajirao Moghe, Minister for Forests, Maharashtra State was the Chief Guest at the concluding function of weeklong programmes held during the Wildlife Week—1987 at the Sanjay Gandhi National Park (Borivli), Bombay. Shri Ram Naik, Local M.L.A. presided over the function. The Management of Sanjay Gandhi National Park, Borivli, and WWF-India had arranged various activities during this week with the help of the Bombay Natural History Society, Sanctuary Magazine and the Nature Lovers. Shri Ashok Basak, Secretary (Planning) Government of Maharashtra had inaugurated the exhibition on Wildlife, arranged in the Information Centre of the Park during the week. The Park is the only sprawling oasis in the entire Bombay Metropolis. An information folder on the Park was published courtesy of the World Wide Fund for Nature-India.

Nature excursions for school children were held during the week in the Park. A pain-

(Contd. on pg. 14)

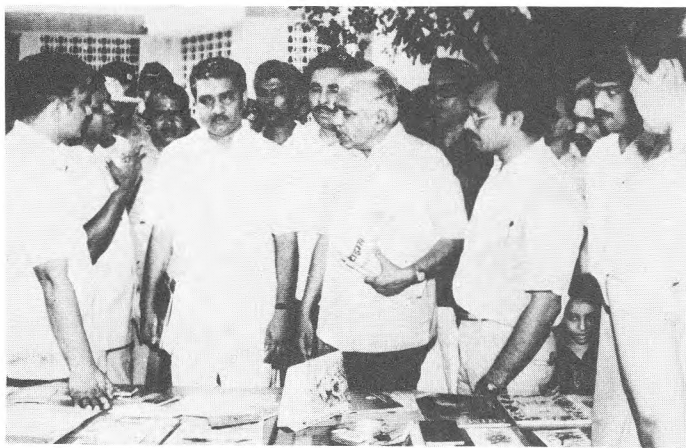
Dear Subscriber

You have been lending your valuable support to WWF-India and to conservation action. With your help, we have also been able to enrol new Subscribers—thus spreading the message of conservation to a wider audience. Today, more people are aware of their natural environment and are voicing their concern at the detrimental effects of pollution, deforestation and other environmental pressures. Such awareness is most heartening and we hope that with your continued support, the conservation movement will gain impetus.

For your convenience, we have enclosed a SUBSCRIPTION FORM. In case you have already sent your renewal, or if you are a Life Subscriber, please pass on the form to a friend.

Thank you

A view from within the WWF-India products stall at the Sanjay Gandhi National Park during Wildlife Week.



Kerala State Office initiates Nature Camp

N.C. THOMAS
EDUCATION OFFICER, Kerala State, WWF-India

Fifty-two kms off Trivandrum in the picturesque village of Aripa, surrounded by one of the few remaining patches of forest land in the State of Kerala was the site for the birdwatching camp held during the first week of October (Wildlife Week) as the most suitable time.

There were 31 campers in all and 4 teachers with them. Though all the nature clubs in Kerala had been informed about the Camp, only 8 members most of them advisors and co-ordinators, had responded. So an appeal was flashed to the newly formed nature clubs in Trivandrum. The response was overwhelming. 11 boys and 20 girls from 6 nature clubs in the city were selected for the 3-day camp. These were from the Assisi Nature Club (Holy Angel's Convent School), Hornbill Nature Club (Government Model Girls High School, (Pattom), Oyster Nature Club (Kendriya Vidyalaya, Pattom), Lisieux Nature Club (Carmel High School), Kaziranga Nature Club (Loyola School) and Salim Ali Nature Club (St. Joseph's High School).

The Camp commenced in the afternoon of Friday, October 2, with a talk by Mr. C.V. Chandran, a local environmentalist and after tea Mr. Abdul Basheer (Field Officer, Kerala Forest Development Corporation) took over. This frail young man, who looks very much like the late Dr. Salim Ali had volunteered to serve the Camp as chief instructor. The campers did enjoy their first bird-watching session till late evening.

Early morning on the following day the city-bred campers whose enthusiasm had been aroused by then, followed "Uncle Basheer" into the jungle, armed with binoculars, cameras, tape-recorders and even handbooks on birds! A Grey-Malabar horn-bill with its wings outspread, was preening joyously in the morning sun. It was perched on the dry branch of a lofty tree. Most of the campers had never seen a hornbill (or any other bird!) in the wild. They were thrilled when the avian host emitted a series of hen-like calls as if to welcome the young visitors from the city.

Mr. N. Sukumaran, Asst. Forest Publicity Officer, spoke to them on forests and wildlife. Later in the afternoon Dr. P.C. Aravindakshan of the Kerala University College told the youngsters about the importance of water in their every-day life, with the help of slides. And after sundown Mr. Suresh Elamon, an accomplished wildlife photographer, took them on a Slide Safari, into the wonderful world of birds and butterflies. The second day ended with a wildlife film show provided by the publicity wing of the State Forest Department.

The camp ended with an interesting five km. trek into an adivasi colony led by an adivasi guide.

On the way back home the campers sang songs in praise of Nature and WWF. The success of this event can be assessed by the interest shown by participants who were keen on knowing when the next camp would be held.

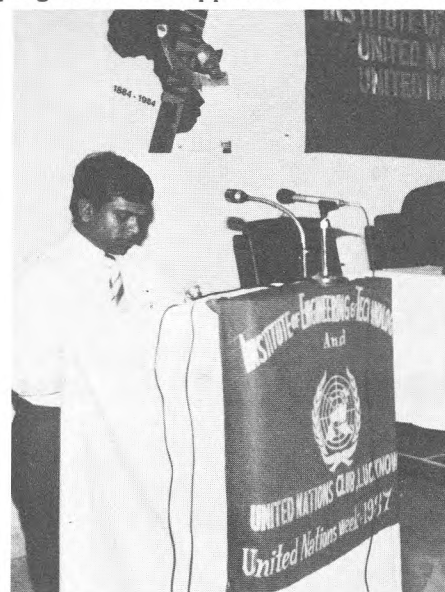
(Contd. from pg. 13)

ting competition for junior arts students and a quiz competition for Junior College students were also arranged.

Uttar Pradesh

LUCKNOW

The United Nations Club, Lucknow, associated with the United Nations N.G.O. Section, aims to promote the ideals of the United Nations, particularly, economic, social and political co-operation. Among its numerous activities has also been a massive conservation programme in support of WWF and its



Shishir Jindal, President, U N Club addressing the gathering.

objective of protecting nature and the environment.

Madhya Pradesh

BHOPAL

WWF-India Madhya Pradesh organised a number of events during wildlife week including a well-attended talk and film show for Rotarians and Nature Club members. The film "Ganges Gharial", was well appreciated.

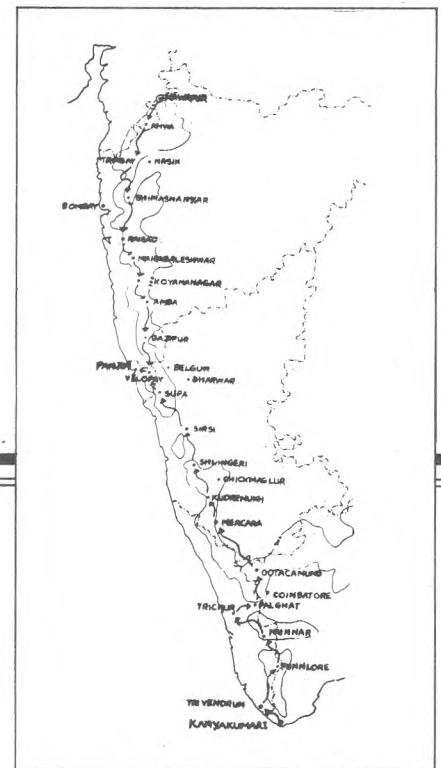
WWF nature club members put up stalls at Rotary Seva Bhavan and the Bhopal National Park where they sold WWF

(Contd. on pg. 15)



Shri Jadhav, Forest Minister, Madhya Pradesh seen here releasing WWF-India products alongwith Col. Guru Ratan Singh, State Organiser, Madhya Pradesh and K.P. Narayanan, Member, Madhya Pradesh State Committee (centre).

educational products in an effort to create environmental awareness. The Bhopal Nature Club also organised a nature-study trip to Rathapani Sanctuary.



SAVE THE WESTERN GHATS MARCH

"Conservation movement of the common people"

November 1, of this year, marked the day when Peninsular India saw the birth of a unique conservation awareness march to save the Western Ghats, the hill ranges which control and regulate the water sources, both underground and surface, in the Deccan.

The march began simultaneously from Kanyakumari in the south and Nawapur in the Dhule District of Maharashtra in the north. This overview concerns the Northern trek, which will end in Panaji in Goa in February meeting the north-bound Southern trek.

Along the route, specially in Dhule, Nashik and Pune Districts, the hills have become bald, not because the tribals have cut the trees or because of their slash-and-burn cultivation practices but because of the avarice of the forest contractors and the inept handling of the situation by forest department officials in most places.

"The British have left four decades ago but the practice still continues, with the result that the tribals have been alienated from their forest, which they know as how best to preserve. Looking at the forest merely as revenue earning Government property, and doing little or nothing for their use as environment protection capabilities, has let down the tribals marginalising their status," say the marchers who conducted surveys in the villages.

In Thane and Raigad Districts the degradation is not extreme but nevertheless the primary forests have thus turned secondary. The red soil has already loosened and the forest department and other Government agencies should move quickly to get the support of

voluntary organisations to save the forests from further deprecation. The tribals through these voluntary organisations could be involved in protecting the Sahyadri ecosystems, and, they are willing to do so.

The marchers are drawn from various sections of society. There is the 76-year old Phadke, a veteran of long marches. He must have walked all over India in the last 7 years. With a stick in hand and wearing nothing more than a plain white sadra and dhoti (of late he has started wearing a pullover), Mr. Phadke along with Mr. H.K. Kulkarni, a retired tehsildar, who has served in Dangs District, shepherd their "flock" along the Sahyadris.

The youngest among the Northern marchers is Sangita Sonawane. The 20-year old Sangita who has just passed the HSC examination and former personnel inspector in the Western Railway, Ms Lalita Oza, have taken seriously the work of surveys in the villages which cover various demographic aspects.

The aim of the survey is to get the current picture of the status of the Sahyadris to prepare a follow-up action programme to overcome the most pressing problems that the villagers face. Undoubtedly, drinking water is the most pressing problem of the hill peoples.

At one village, right in the heart of the forest, the tribals said that even during the monsoons drinking water has to be fetched from a place a km away.

But the most articulate of the marchers who has been able to convince the tribals of the need for protection of the forests for their own benefit and for the benefit of the rural poor is

Mrs. Sugandhabai Tupe. An oustee of the Pawna Project in Pune District. Mrs. Tupe has attracted rural women in large numbers at **gram sabhas** held on the way.

Mr. Jagdish Godbole, the Field Co-ordinator of the northern trek, who has worked in the degraded areas, said that it was difficult to get the local authorities to co-operate with the enlightened locals who want to regreen the brown hills around the tail-waters of the Pawna Dam.

The March moves on and for the marchers and many well-wishers and activists helping them the last two months have been those of revelation. A movement for conserving the Ghats is taking shaping with, as what the Chipko Movement leader, Mr. Chandiprasad Bhatt, said while flagging off the march at Nawapur on November 1st, "the Save the Western Ghats March indicates the growing concern of the common people for their environment. It is the movement of the common people".

An interim appraisal has been made and follow-up action has been given a thought along the lines insisted by the Chairman of the Maharashtra and Goa Committee of WWF-India, Vice Admiral M.P. Awati (retd.) who has been meeting the marchers intermittently, along the route.

—Arun Vinayak

BOLIVIA STRIKES "DEBT FOR NATURE" DEAL

In a move that may change the way the world views both conservation and Third World debt, Bolivia has agreed to create conservation areas totalling more than four million acres, in exchange for reduction of part of its foreign debt.

The agreement was put together by Conservation International, a new, non-profit organisation whose

staff have helped to protect more than three million acres of tropical habitat. With Citicorp Investment Bank acting as an agent in the debt market, Conservation International is purchasing US\$650,000 of Bolivia's foreign debt.

The Bolivian Ambassador, Fernando Illanes said, "The economic health of any nation is ultimately

based on its ecological health. The 'debt for nature' exchange signifies a major breakthrough, not only as a means to reduce Bolivia's debt burden but also as an effective way to protect the natural resources upon which our country's long-term economic health depends."

A PRIMER ON THE OZONE

The International Union for Conservation of Nature and Natural Resources has thrown its support behind recommendations that call for immediate action to control the manufacture of fluorocarbons which are suspected of depleting the earth's ozone layer and threaten global warming.

IUCN joined nearly 80 other non-governmental organisations worldwide and the Natural Resources Defense Council in calling for a total ban on both chlorofluorocarbons and another group of bromine containing chemicals known as "halons" which will cause the same effects.

Chlorofluorocarbons and other long-lived chlorine and bromine-containing compounds have a wide range of industrial and commercial applications, including refrigeration, insulation, aerosol pro-

pellants, solvents and fire extinguishers. In all such applications, the compounds are released into the air, either immediately or on a delayed basis. The lifetime of most chemicals in the atmosphere is usually measured in months, however, CFCs can remain in the atmosphere unaltered for a century or more.

Over time, they migrate into the upper atmosphere (the stratosphere), which contains the earth's protective ozone shield.

Ozone depletion allows more ultraviolet radiation to reach ground level, in particular radiation in the wavelengths known as UV-B. This radiation is highly dangerous because life on earth is delicately tuned to the wavelengths and intensity of solar radiation reaching ground levels.

Higher levels of UV-B radiation will sharply increase rates of non-melanoma skin cancer and probably malignant melanoma as well. According to the Natural Resources Defense Council millions of additional cases of skin cancer will result between 1980 and 2025. Eye damage, including cataracts and retinal damage, will also occur. Increased UV-B radiation will lead to higher levels of ozone "smog" in urban atmospheres. Climate change caused by these compounds will also have a severe effect on health. Urban death rates will rise as the number and severity of summertime heat waves increase.*

ASIAN WETLAND THREATENED

The future of one of Asia's most important wetlands is threatened by an increasing range of development schemes, including the construction of an international airport by China and one of the world's largest rubbish dumps. The end of the new runway would lie just seven kilometres away from the Mai Po Marshes Nature Reserve, an area managed by WWF-Hong Kong. The marshes are part of a much larger wetland system—the 115 km² of Deep Bay.

The rubbish dump would be located on the edge of the Bay and hold some 65 million tons of refuse. Initially, the dump will take domestic refuse but it is also expected to take toxic, hazardous and dangerous wastes in the future.

The Mai Po Marshes, covering about 300 ha, comprise a series of shallow shrimp ponds, constructed in the 1940s, and the largest stand of dwarf mangrove remaining in Hong Kong. In spring, up to 40 species of shore birds visit the marshes, while numbers of wintering waterfowl are increasing. Among regular avian visitors, are rare and endangered species such as dalmatian pelican, spotted greenshank, spoon-billed sandpiper, Asiatic dowitcher and Saunders' gull.

The Marshes rely on Deep Bay for their water supply. Increasing pollution in the Bay is also worrying conservationists and planners alike. Meanwhile over 20,000 school students and members of the

public will visit the WWF-Hong Kong Mai Po Education Centre and Nature Reserve and visitor numbers are expected to increase as further facilities are provided. With an improving level of environmental awareness, WWF-Hong Kong hopes that public opinion will ensure the continued survival of Mai Po—but time is short.**

CONTAMINATION OF THE LAND

Leaking hazardous waste dumps, soil and ground-water laced with insecticides, and marine waters slick with crude oil, have been the unwelcome

legacy of the chemical age. In many countries of the world, wildlife has been a prominent casualty of this contamination. Toxic chemicals have spawned

mortalities, reproductive failures and habitat destruction for species ranging from the peregrine falcon to the polar bear.

In Canada, the Wildlife Toxicology Fund (WTF) has emerged as the major vehicle for tackling critical issues in the toxic contamination of Canada's wildlife. Established in 1985, the WTF backs research in the field of wildlife toxicology. Priority concerns of the WTF include the impact of agricultural and forestry chemicals, as well as industrial pollutants, on wildlife. The grant programme is also sponsoring the use of wildlife as indicators of toxic chemicals in the environment.

Research, funded under the programme, is directly relevant to the key wildlife toxicology issues confronting Canada today. Included among the priority concerns are:

Great Lakes contamination—The Great Lakes constitute a huge freshwater resource shared by Canada and the United States. Contamination of the Great Lakes and its impact on the region's wildlife is a matter of growing concern on both sides of the border. Through the WTF, researchers are investigating problems such as dioxins in herring gulls and tumour in certain species of Great Lakes fish.

River clean-up—The WTF's achievements have led to collaboration with industry and government solving specific pollution problems. For example, Atlas Specialty Steel Company in Welland, Ontario, joined forces with WTF researchers at a local university to redesign its manufacturing processes and eliminate 80 per cent of the contamination in effluents reaching Welland River wetlands. Work is underway to achieve a total clean-up.*

The Chilean forest

Memoirs

Pablo Neruda

"Under the volcanoes, beside the snow-capped mountains, among the huge lakes, the fragrant, the silent, the tangled Chilean forest . . . My feet sink down into the dead leaves, a fragile twig crackles, the giant rauli trees rise in all their bristling height, a bird from the cold jungle passes over, flaps its wings, and stops in the sunless branches. And then, from its hideaway, it sings like an oboe . . . The wild scent of the laurel, the dark scent of the boldo herb, enter my nostrils and flood my whole being . . . The cyprus of the Guaiteceas blocks my way . . . This is a vertical world, a nation of birds, a plenitude of leaves . . . I stumble over a rock, dig up the uncovered hollow, an enormous spider crab . . . A golden caribus beetle blows its mephitic breath at me as its brilliant rainbow disappears like lighting . . . The piercing interruption of the hidden bird . . . The vegetable world keeps up its low rustle until a storm churns up all the music of the earth. Anyone who hasn't been in the forest doesn't know this planet . . . I have come out of that landscape, that mud, the silence, to roam, to go singing through the world."

Penguin Books, London, UK **

WWF PIONEERS DEBT-FOR-NATURE SWAP

WWF has negotiated a debt-for-nature swap with Ecuador and has made an initial pledge to buy US\$1 million in Ecuadorean debt from commercial banks and use the money to finance conservation projects through Fundacion Natura, a non-governmental organisation based in Quito.

Speaking at WWF International's fourth annual meeting of its Council in Lausanne, Switzerland, President of Fundacion Natura and recently-

appointed Member of WWF International's Council, Roque Sevilla said, "This deal provides extraordinary leverage for WWF's conservation investment in Ecuador...it should yield as much as six dollars of conservation benefit for every dollar invested, a remarkable yield in any field, but especially in Third World conservation".

The proceeds will benefit a variety of conservation activities in Ecuador, all aimed at strengthening the

country's system of national parks and reserves.

Pioneered by former executive Vice-President of WWF-US, Dr. Tom Lovejoy, debt-for-nature proposals are a new and innovative means of saving tropical rainforests, wetlands and areas rich in biological diversity. They also help nations reduce their commercial debt burdens.**

WWF HONOURS POPULATION SCIENTIST

Population scientist and writer Paul R. Ehrlich, the WWF Gold Medallist for 1987, urged environmentalists in his prize address to promote public understanding of the global context of conservation problems.

The presentation was made in Lausanne on 5 November by WWF International President HRH The Duke of Edinburgh.

Professor Ehrlich, 55, who came into conservation campaigning as a result of his efforts to protect a butterfly, told WWF International Council Members that it was important to protect individual species but conservationists should also point out "it'll only

work if we don't let the ozone layer deplete and it will only work if we manage to control the population."

The challenge today is to get public attention to fix on the longer-term issues. Among these is the increase of greenhouse gases in the atmosphere, he said. "It is going to do a lot more than change the temperature. It is going to change climates everywhere. Natural areas of the world are quickly becoming islands."

Professor Ehrlich is the 26th person to receive the annual award. His citation states that he had been chosen "in recognition of his achievements as a global spokesman on population, extinction and

other environmental issues, and his contribution to the development of the science of conservation biology".

Noting that WWF's campaign theme over the past 18 months has been awareness, training and education, Director-General Charles de Haes pointed out that Professor Ehrlich is "an outstanding promoter of the cause of conservation and a man who has no peers in spreading the conservation messages".**

* Courtesy: IUCN Bulletin
** Courtesy: WWF News

Awareness, via Mail

MAJ. GEN. E. D'SOUZA

Former Secretary-General, WWF-India



I am happy to inform readers of this Newsletter that PHILATELY has begun to evoke responses; I have enquiries seeking advice on collecting wildlife stamps. One of them was from a Naval Commander in Goa. I do hope that this interest in stimulating awareness in nature grows. The other equally exciting fall-out is a request from BNHS to prepare some exhibits of stamps on avifauna for an exhibition in honour of the late Dr. Salim Ali.

During the last quarter I have received some fresh acquisitions to my growing collection from such diverse countries as the Norfolk Islands in the Pacific, Botswana in Southern Africa and Seychelles in the Indian Ocean.

Norfolk Islands

Has released four stamps on 16 September 1987 featuring the rare indigenous Green Parrot in the undermentioned values:—

5c Male parrot
15c Parent with chick
36c Two young
55c A female

The stamps are printed in lithography (Australia).

The Green Parrot is medium sized, about 30 cms long. Females are slightly smaller but the plumage is identical viz. emerald green, a bright red crown and violet-blue wing edges.

The Green Parrot lays about 7 eggs. The incubation period is about 21 days though only the female broods. The male

feeds the female who in turn feeds the chicks. Young birds leave the nest after about 6 weeks but appear to stay in family groups for some time.

In 1788 Green Parrots were numerous on the Island. In 1908 the numbers dwindled, so much so, that they became uncommon. In 1980 the population in the wild was about 18 birds. Reasons? Lack of nesting sites; harassment by the more aggressive larger Red Parrots; and falling prey to feral cats and rats. Captive breeding to save the species was resorted to in 1983 though teething troubles are yet to be overcome. The following measures have also been adopted:—

- Declaration of the Norfolk Island National Park.
- Rat control measures.
- Forest regeneration.
- Provision of nest boxes.
- Release of captive birds on the near-by revegetated Philips Island.

Botswana

Animals of Botswana (Definitives) released on 3 August 1987. Designed by P. Huebsch and printed in England by Harrison & Sons by photogravure.

- 1t Cape Fox (*Vulpes chama*)
- 2t Lechwe (*Kobus leche*)
- 3t Zebra (*Equus burchelli*)
- 4t Duiker (*Sylvicapra grimmia*)
- 5t Banded Mongoose (*Mungos mungo*)
- 6t Rusty-spotted Genet (*Genetta tigrina*)
- 8t Hedgehog (*Erinacus frontalis*)
- 10t Scrub Hare (*Lepus saxatilis*)



- 12t Hippopotamus (*Hippopotamus amphibius*)
- 15t Suricate (*Suricata suricatta*)
- 20t Caracal (*Felis caracal*)
- 25t Steenbok (*Raphicerus campestris*)
- 30t Gemsbok (*Oryx gazella*)
- 35t Square-lipped Rhinoceros (*Ceratotherium simum*)
- 40t Mountain Reedbok (*Redunca fulvorufa*)
- 50t Rock Dassie (*Procavia capensis*)
- P1 Giraffe (*Giraffa camelopardus*)
- P2 Tsessebe (*Damaliscus lunatus*)
- P3 Side-striped Jackal (*Canis adustus*)
- P5 Hartebeest (*Alcelaphus buselaphus*)

Seychelles

(Zil Elwanyen Sesel)

Four Definitives under the WWF Wildlife Stamp programme featuring the Aldabra Turtle.

- 50c Torti d'Ter Single Turtle
- 75c " Group
- R1 " Three turtles
- R2 " Single side view

Release Date : 9, September 1987
Designer : Gyula Vasarhelyi
Printer : The House of Questa
Process : Lithography
Designs : Aldabra Tortoises. Each stamp bears the WWF Logo

Review of the Protected Areas System in the Indo-Malayan Realm

SAMAR SINGH,
Chairman, Central Conservation Advisory Committee, WWF-India

In February 1985 a working session of IUCN's Commission on National Parks and Protected Areas (CNPPA) was held in the Corbett National Park, Uttar Pradesh (India), to focus attention on protected areas of the Indo-Malayan Realm. Park professionals from 12 countries in the region met for the first time to review the status of conservation efforts being made in their respective countries. They recognised the need for an overall assessment of the protected areas system throughout the realm and hence the preparation of a system review was included in the "Corbett Action Plan" adopted at this meeting.

The task of conducting, preparing and disseminating widely such a review, using modern biogeographic concepts, was assigned to the IUCN/CNPPA. The latter, in collaboration with the United Nations Environment Programme, engaged consultants John and Kathy MacKinnon to undertake this important work. The end-product, after more than two years of intense work by the consultants, is a two volume review which has been just published and can be obtained from the IUCN Conservation Monitoring Centre, 219 C, Huntingdon Road, Cambridge, CB 3 0DL, U.K., or the IUCN Publications Services, Avenue du Mont Blanc, Gland, Switzerland.

The first volume, the narrative part running into 284 pages, is divided into five sections as follows:

Part one is the introduction, dealing with the objectives and criteria of the review undertaken.

Part two is mainly concerned with explaining various aspects of the Indo-Malayan Realm.

The third part deals with the protected area coverage by biogeographic units in the realm with particular attention paid to distinct habitats such as mangroves, swamp forest, lowland rainforest, etc.

Part four relates to general conservation issues like population pressure, threats to forests and wetlands, protection of critical habitats and so on.

Part five entitled 'Priorities for Country Action' is of special importance as it reviews national protected area networks, on a country to country basis, and gives recommendations for extending and improving national reserve systems.

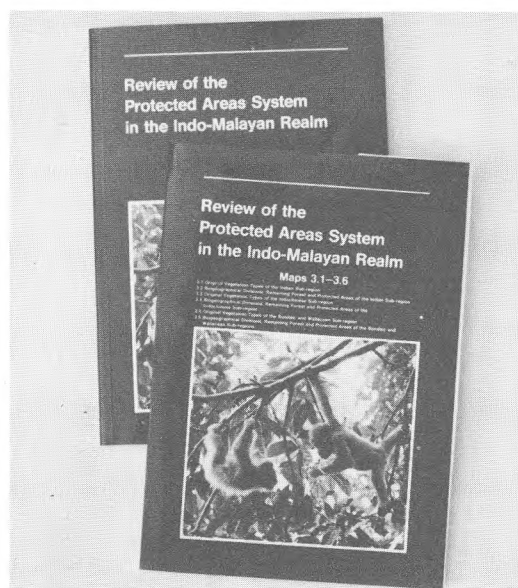
The second volume contains detailed maps depicting the original vegetation types, the bio-geographical divisions, and the remaining forest and protected areas of the Indian, Indo-Chinese, Sundaic and Wallacean Sub-Regions.

The role of protected areas in maintaining essential ecological processes and life-support systems and preserving genetic diversity is well recognised. This role assumes special significance in the Indo-Malayan region, which presents one of the biggest paradoxes in conservation: it is the home of well over half of the world's human population as well as some of the richest and most distinctive ecosystems on Earth.

In a sense, the work by the MacKinnons is of a pioneering nature because this is the first time such a comprehensive coverage of the whole region has been attempted. Having travelled widely in the region and with their personal knowledge of the situation in some

parts of South and South-East Asia, the MacKinnons have overall, done a commendable job.

Here, however, two points need to be made. First, that the Review is more or less confined to terrestrial protected areas and does not deal with the marine habitats of the realm. This does detract from the comprehensive coverage of the subject. However, as mentioned by the authors, earlier R.V. Salm and M. Halim had produced studies on the marine and coastal resources of the region. Secondly, the review has drawn heavily on preliminary drafts of the directories of protected areas of the realm under preparation, by the IUCN Conservation Monitoring Centre and such other data or information which has been made available in the last two years by various individuals and organizations from within and outside the region. Naturally, there has been no time for any ground truth verification. It should therefore be borne in mind that such an overview is bound to contain too many generalizations and that it cannot possibly give equal and adequate treatment to every bio-unit. It is for this reason that, IUCN President Dr. M.S. Swaminathan states in his foreword, "IUCN hopes that this will be viewed as a working document and that it will stimulate action at the national level. IUCN and UNEP indeed will promote national-level reviews of protection areas which will allow finer resolution and more detailed assessments."



As far as India is concerned, it is worth noting that the Wildlife Institute of India, Dehradun, has already undertaken a much more detailed review of the Indian protected area system, also based on biogeographical considerations. This project, initiated under the Government of India's National Wildlife Action Plan adopted in 1983, has prepared a biogeographical classification for India on the basis of floral and faunal associations. Using this classification, the project is currently reviewing the location, size, viability and quality of management of all existing protected areas in the country and identifying new areas for protection status. A preliminary report shows that as yet many states have not reached the recommended goal of reserving 5% land area proposed as conservation areas. ■

Man, the only species with the power to damage the environment, has also the means and will to keep his natural resources intact.

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The existing picture as you know is grim and, with the complex factors at work, seemingly impossible to resolve

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